

Background Arsenic & Public Health Impacts

Rosalind A. Schoof, Ph.D., DABT

September 2005

Integral Consulting, Inc.
Mercer Island, WA
rschoof@integral-corp.com

How Much Arsenic Are We Exposed to Naturally?

Source of Exposure	Average Dose for Child ^a (μg/day)	Average Dose for Adult ^a (μg/day)
Food	1.3 – 3.7	3.2 – 7.4
Water, 10 μg/L	6.0	14
Water, 1 μg/L	0.6	1.4
Soil, 50 ppm	1.0 – 2.5	0.5 – 1.25
Soil, 20 ppm	0.4 – 1.0	0.2 – 0.5
Air, 0.025 μg/m ³	0.22	0.33

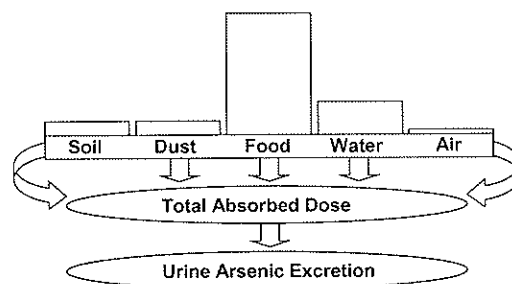
^a Child ingests 0.1 g soil, adult ingests 0.05 g soil, RBA 0.5-0.2

How Much Influence Does Soil Have on Daily Arsenic Exposure?

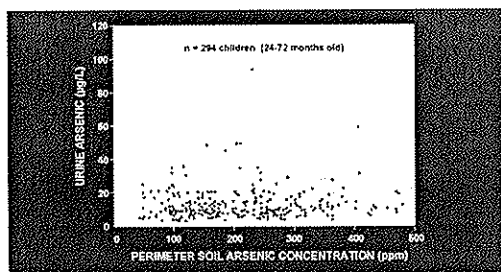
Ranges of Total Daily Arsenic Dose from all Background Sources (μg)

	Adult	Child
Diet + water + air	4.9	2.1
Diet, water, air + 20 ppm soil	5.1	2.5
Diet, water, air + 50 ppm soil	5.4	3.1

Influences on Background Urine Arsenic



Anaconda: Urine Arsenic vs. Soil Arsenic



Conclusions

- Low level As contamination of soils (i.e., <50ppm) is widespread in the U.S.
- In most cases, the amount of As that could be absorbed from soils is small compared to natural sources (i.e., diet)
- Even properly designed biomonitoring studies will only be able to detect trends in large populations
- There is no measurable difference in health risk from soil containing 20 or 50 ppm of arsenic